

Notes 9/19 - Solving Equations

- When you solve an equation, you work backwards and undo.

→ A M E P
S D

- Sometimes you have to simplify a side first

Ex: $\underline{5a} + 3 - \underline{2a} = a + 7$

$$\begin{array}{r} 3a + 3 = a + 7 \\ -a \quad -a \\ \hline \end{array}$$

$$\begin{array}{r} 2a + 3 = 7 \\ -3 \quad -3 \\ \hline \end{array}$$

$$\begin{array}{r} 2a = 4 \\ \frac{2}{2} \quad \frac{2}{2} \\ \hline \end{array}$$

$$a = 2$$

Solving for a Variable

- Rearrange the equation to isolate a specific variable.

* 3 Questions to Ask Yourself

1) What's with my variable that I need to get rid of?

2) How is that stuff connected to my variable?
(+, -, *, ÷)

3) How can I undo that connection?

Ex: $\Delta V = \overset{+V_A}{V_B} - \overset{+V_A}{V_A}$ Solve for V_B

$$\boxed{V_B = \Delta V + V_A}$$

Ex: $S = \overset{-\pi r^2}{\pi r l} + \overset{-\pi r^2}{\pi r^2}$ Solve for l .

$$\frac{S - \pi r^2}{\pi r} = \frac{\pi r l}{\pi r}$$

$$l = \frac{S - \pi r^2}{\pi r}$$

Ex: $\frac{3 \cdot V}{\pi h} = \frac{\cancel{\frac{1}{3}} \cdot \cancel{3} \cdot \pi r^2 h}{\cancel{\pi h}}$ Solve for r

$$\sqrt{\frac{3V}{\pi h}} = \sqrt{r^2}$$

$$r = \sqrt{\frac{3V}{\pi h}}$$

- Whenever the variable you're solving for is on the bottom, you first multiply both sides by the variable you're solving for.

Ex: $V \cdot D = \frac{M}{V} \cdot V$ Solve for V

$$\frac{V \cdot \cancel{D}}{\cancel{D}} = \frac{M}{D}$$

$$V = \frac{M}{D}$$